

### REMARKS / ARGUMENTS

The claims are 21-34. Claims 21-26, 28 and 34 have been amended to better define the invention and to remove British spellings. Three sheets of replacement drawings and one new sheet of drawings have been added. New FIGS. 3B and 3C have been added to show the features of amended claim 26, namely, FIG. 3B shows a knitted aluminum fabric which has stitch rows of varying width, and FIG. 3C shows a knitted aluminum fabric which has stitch wales of varying width, respectively. Accordingly, FIG. 3 has been relabeled FIG. 3A, and the specification has been amended in view of these changes. Support may be found, *inter alia*, in the disclosure at page 3 and in the original claims and drawings. Reconsideration is expressly requested.

The drawings were objected to under 35 C.F.R. 1.83(a) as failing to show the stitch wales and/or stitch rows of varying width recited in claim 26. In response, Applicants have added new FIGS. 3B and 3C to show these features, and the specification has been amended in view of these new drawings. It is respectfully submitted that the foregoing amendment overcome the

Examiner's objection to the drawings, and Applicants respectfully request that the objection to the drawings be withdrawn.

Claims 21-26, 28, and 30-31 (and apparently also claim 27) were rejected under 35 U.S.C. 103(a) as being unpatentable over *Pirchl* U.S. Patent No. 5,996,730 in view of *Stricker* U.S. Patent No. 5,681,072 and *Pall* U.S. Patent No. 3,783,969. The remaining claims were rejected under 35 U.S.C. 103(a) as being unpatentable over *Pirchl*, *Stricker*, and *Pall* and further in view of *Mueller et al* U.S. Patent No. 5,196,253 (claim 29) or *Zaima et al* U.S. Patent No. 5,134,014 and *Fredrick et al*. U.S. Patent No. 5,866,235 (claims 32-34). Essentially the Examiner's position was that *Pirchl* discloses the sound proof thermal shield recited in the claims, except for features which were considered to be either shown by the secondary references or within the skill of the art.

This rejection is respectfully traversed.

As set forth in claim 21 as amended, Applicants' invention provides a soundproof thermal shield for motor vehicles. The thermal shield includes a support made from aluminum, at least

one noise absorbing layer, and a thermal covering made from aluminum. The at least one noise-absorbing layer is created from multiple plies of knitted aluminum fabric. At least 5 superimposed plies of knitted aluminum fabric are compressed to create a permeable mat in such manner that the mat has a thickness in the range from 0.5 to 3 mm and a microporous structure with a plurality of narrow, branched channels. The support has a free side with a plurality of noise pass-through apertures, the diameter of which is in the range from 0.1 to 1.9 mm, with up to 24 noise pass-through apertures per cm<sup>2</sup> being arranged thereon.

In this way, Applicants' invention provides a soundproof thermal shield for motor vehicles, which provides highly effective heat insulation, has a high noise-absorptivity, and is readily recyclable.

None of the cited references discloses or suggests a soundproof thermal shield for motor vehicles having the structure recited in claim 21 as amended or teaches the benefit of that structure wherein at least one noise-absorbing layer is created from multiple plies of aluminum fabric, at least 5 superimposed

plies of knitted aluminum fabric are compressed to create a permeable mat, and the support has a free side with a plurality of noise pass-through apertures.

Although the primary reference to *Pirchl* discloses a soundproof thermal shield particularly for motor vehicles including a support 3 made from aluminum, at least one noise absorbing layer 4, and a thermal covering 2 made from aluminum, it is respectfully submitted that there is no disclosure or suggestion in *Pirchl* of at least one noise-absorbing layer created from multiple plies made of aluminum fabric wherein at least 5 superimposed plies of knitted aluminum fabric are compressed to create a permeable mat in such a manner that the mat has a thickness in the range of 0.5 to 3 mm and a microporous structure with a plurality of narrow, branched channels. There is also no disclosure or suggestion in *Pirchl* of a thermal shield for motor vehicles wherein the support has a free side with a plurality of noise pass-through apertures, the diameter of which is in the range from 0.1 to 1.9 mm, up to 24 noise pass-through apertures per cm<sup>2</sup> being arranged thereon.

The defects and deficiencies of the primary reference to *Pirchl* are nowhere remedied by any of the secondary references. *Stricker* discloses a sound absorber from motor vehicles in the form of a double-wall, resonant body having a front wall with a plurality of holes and a substantially unperforated rear wall, wherein the front wall faces the noise source. The front wall and the rear wall define a single cavity free from acoustic partitions that is shared by all of the holes. This known sound absorber of *Stricker* is constructed as a combined plate/perforated resonator.

*Stricker* wants to provide a sound absorber which can be constructed in a dirt insensitive manner and which is therefore also useable in outer areas of motor vehicles and which permits a good absorption in a wide frequency range, particularly at low frequencies at 250 Hz and below; however, there is no disclosure or suggestion in *Stricker* of a sound proof thermal shield for motor vehicles. Rather, the sound absorber shown in FIGS. 1 and 2 of *Stricker* is designed as a wheel house lining, while the sound absorber shown in FIGS. 3 and 4 is designed as an engine cowling. The sound absorbers shown in FIGS. 1 to 4 do not

comprise a noise absorbing layer in the form of a mat as recited in Applicants' claim 21 as amended.

In the embodiment shown in FIG. 5 of *Stricker*, the front wall of the sound absorber is covered with a thin foil or sheet 521, which closes the holes 522 of the front wall in liquid-tight manner. As a result of this closed absorber construction it can be positioned at those points on vehicles which are exposed to wet and moisture, such as, e.g., the engine cowling. See col. 6, lines 13-24 of *Stricker*.

In contrast, Applicants' invention as recited in claim 21, as amended, includes a support that has free side with a plurality of noise pass-through apertures, i.e. the outer surface of the support 4 is not covered. The soundproof thermal shield according to Applicants' claim 21, as amended, is an open sound absorbent system.

FIGS. 6 and 7 of *Stricker* show open absorption systems, in which the holes 622 and 722 of the front wall 618 and 718 are open. In the embodiment of FIG. 6 of *Stricker*, the inside of the front wall directed towards the interior of the absorber is covered with an absorption mat 25, which is able to absorb sound

energy which has penetrated through the holes 622 of the front wall.

Soundproof thermal shields are used in motor vehicles to prevent heat that radiates from the muffler and other parts of the exhaust system from coming into contact with the car body. It is respectfully submitted that a person of ordinary skill in the art knows that such thermal shields are used at points of motor vehicles which are exposed to wet and moisture; however, *Stricker* teaches not only that the open absorption system shown in FIGS. 6 and 7 are used at those points of motor vehicles which remain dry, but also that these embodiments as well can be covered with foils or the like on the open sides in order to use these systems at points on vehicles which are exposed to wet and moisture. See col. 6, lines 63-67 of *Stricker*.

*Pinchl* relates to a sound proof thermal shield, namely a heat shield with acoustic insulation for motor vehicles. See col. 1, lines 5-12. Such heat shields are used to prevent heat that radiates from the muffler and other parts of the exhaust system from coming into contact with the car body. It is clear that such heat shields are exposed to wet, moisture and dirt.

Although the sound proof thermal shield disclosed by *Pirchl* is well suited to be mounted at points (areas) of motor vehicles which are exposed to wet, moisture and dirt, there is no indication in *Pirchl* that there is any problem regarding moisture and/or dirt with respect to his soundproof thermal shield.

Therefore, it is respectfully submitted that a person skilled in the art would have no motivation to modify the soundproof thermal shield of *Pirchl* by using a front wall of a sound absorber according to *Stricker*.

Furthermore, *Stricker* teaches that at least the front wall of the sound absorber, and preferably substantially the entire sound absorber is advantageously made from thermoplastic material, particularly polypropylene. See col. 4, lines 37-40 of *Stricker*; however, thermal shields for motor vehicles are exposed to high temperatures. Because of the high temperatures which, e.g., can amount to 400°C and more, in particularly if catalytic converters of exhaust systems are concerned, thermoplastic material is entirely unsuitable as material for thermal shields for motor vehicles.



Also, for this reason, it is respectfully submitted that a person of ordinary skill in the art would obtain no suggestion or motivation from *Stricker* to use the open sound absorber shown in FIG. 6 as a model for a soundproof thermal shield in a motor vehicle which is usually exposed to high temperatures.

Moreover, as stated previously *Stricker* teaches to cover the perforated front wall of his sound absorber if the absorber is used in wet conditions. The front wall of the absorber according to FIG. 5 is covered with a thin foil or sheet 521 which closes the holes of the front wall in a liquid-tight manner. In contrast, Applicants' support as recited in claim 21 as amended has a free side with a plurality of noise pass-through apertures. The absorbers shown in FIGS. 6 and 7 of *Stricker* are used at those points of motor vehicles which remain dry. (See col. 6, lines 19-67).

In addition, *Stricker* teaches that there are mats which are compressed in such a way that they are air-permeable only to a limited extent, and that such mats tend to clog in the case of dirt access, so that they cannot be used in the outer area of motor vehicles. See col. 1, lines 43-51 of *Stricker*. Thus, it is respectfully submitted that a person of ordinary skill in the

art obtains no suggestion or motivation from anything taught by *Stricker* to use the open sound absorber shown in FIG. 6 as a model for a soundproof thermal shield in a motor vehicle which is usually exposed to wet and moisture.

In addition, neither *Pirchl* nor *Stricker* discloses a noise absorbing layer created from multiple plies of knitted aluminum fabric wherein at least 5 superimposed plies of knitted aluminum fabric are compressed to create a permeable mat in such a manner that the mat has a thickness in the range from 0.5 to 3 mm and a microporous structure with a plurality of narrow, branched channels as recited in Applicants' claim 21 as amended.

As mentioned previously, *Stricker* teaches that there are mats, which are compressed in such a way that they are air-permeable only to a limited extent, and that such mats tend to clog in the case of dirt access, so that they cannot be used in the outer area of motor vehicles. See col. 1, lines 42-51.

*Pall* is even further afield. *Pall* discloses an acoustics insulation comprising anisometric compressed and bonded knitted wire mesh composites composed of a plurality of sheets of knitted wire mesh, superimposed at random orientation with respect to

each other, compressed to a voids volume within the range from about 10 to about 90 percent and bonded together. The sheets are taken in sufficient number, at least five, to form a self-supporting relatively non-resilient composite of high tensile strength and high breaking system.

In particular, *Pall* teaches that these compressed and bonded knitted wire mesh composites are suited as filters for taking up dirt. See particularly, col. 3, lines 42-56 of *Pall*. There is no disclosure or suggestion in *Pall* of using these compressed and bonded knitted wire mesh composites in a soundproof thermal shield for motor vehicles.

Moreover, with respect to the teaching of *Stricker* according to which compressed mats cannot be used in the outer area of motor vehicles, there is no suggestion or motivation to combine a compressed and bonded knitted wire mesh composite as taught by *Pall* with an open absorption system according to FIGS. 6 and 7 of *Stricker*. Therefore, it is respectfully submitted that at the time the present invention was made, it would not have been obvious to one of ordinary skill in the art to combine the teachings of *Pall*, *Stricker* and *Pirchl* in the manner suggested by the Examiner in order to have a soundproof thermal shield for

motor vehicles as defined in Applicants' claim 21, as amended.

Thus, although the Examiner has taken the position that it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate selected features from *Stricker and Pall* into the *Pirchl* soundproof thermal shield, it is respectfully submitted that the Examiner is engaging in impermissible hindsight as not only would one skilled in the art have no reason to make the combination suggested by the Examiner but doing so would also be proceeding against the teachings of *Stricker*.

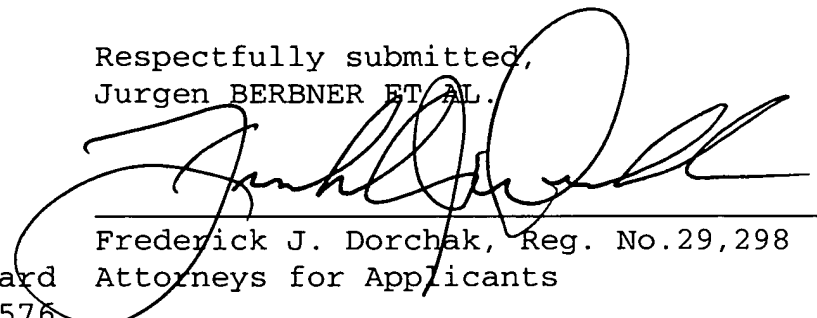
The remaining references to *Mueller et al.*, *Zaima et al.* and *Fredrick et al.* have been considered but are believed to be no more relevant. None of these references discloses or suggests a soundproof thermal shield for a motor vehicle having the structure set forth in Applicants' claim 21 as amended, or teaches the benefits achieved by that structure.

Accordingly, it is respectfully submitted that claim 21 as amended, together with claims 22-34, which depend directly or indirectly thereon contain patentable and unobvious subject matter.

In summary, claims 21-26, 28 and 34 have been amended, and new FIGS. 3b and 3C have been added. In view of the foregoing, it is respectfully requested that the claims be allowed and that this case be passed to issue.

Respectfully submitted,  
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Enclosure:        Appendix - 3 replacement sheets of drawings  
                         1 new sheet of drawings  
                         Copy of Petition - 2 month extension of time

I hereby certify that this correspondence is being deposited with the U.S. Postal Service as first class mail in an envelope addressed to: Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on March 3, 2008.

  
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# APPENDIX

**Amendments to the Drawings:**

The attached four sheets of drawings include replacement sheets depicting FIGS. 1 and 4, 2 and 3A, and 5, and a new sheet depicting FIGS. 3B and 3C. FIGS. 1, 2, 3A, 4 and 5 correspond to FIGS. 1-5 of the drawings as originally filed. Originally filed FIG. 3 has been relabeled FIG. 3A. The new FIGS. 3B and 3C show the features of claim 26, namely a knitted aluminum fabric which has stitch rows of varying width (FIG. 3B) and a knitted aluminum fabric which has stitch wales of varying width (FIG. 3C), respectively. The replacement sheets depicting FIGS. 1 and 4, 2 and 3A, and 5 replace the sheets currently on file depicting FIGS. 1 and 4, 2 and 3, and 5. As stated above, new FIGS. 3B and 3Cd show features previously recited in claim 26.

Attachment:     3 Replacement Sheets; and  
                  1 New Sheet